

Completed Return on Investment Project Case Study

United States Department of Energy
Office of Environmental Management
Fact Sheet

Solid Phase Extraction System for Oil and Grease Los Alamos National Laboratory

Original Problem

LANL's federal permit (NPDES) requires extensive testing of all waste water before it can be released. In the past the oil and grease concentration of the water was tested using a labor-intensive liquid-liquid extraction process that required at least 150ml of hexane per sample. 15-20 Liters of mixed low level waste were generated each year from this procedure.

The Project Solution

An automated oil and grease extraction unit was purchased. Solid phase extraction is used to trap the oil and grease from the water onto a filter. The oil and grease can be removed from the filter with less than 30ml of hexane, a reduction of approximately 80% over the old procedure.

Value of Improvement

The automated oil and grease extractor generates only 1-2 Liters of mixed low level waste per year for the same number of samples as the old method. The waste treatment savings total approximately \$1500 annually. The automated oil and grease extractor minimizes the employee exposure to solvents and the samples, and it eliminates about 16 hours worth of sample preparation time each month.

Lifecycle Waste Reduction	
Lifecycle Waste Reduction	150L MLLW
Commencement Date	1999
Project Useful Life (Years)	10



DOE Monetary Benefits

Total Project Cost	\$18,178
Lifecycle Savings	\$1500 / year
Return on Investment	92%

Benefits At-A-Glance

- Reduces the time required for sample preparation by 16 hours per month.
- Prevents the generation of 15L of liquid MLLW per year and saves \$1500 annually on waste treatment fees.
- Minimizes employee exposure to solvents and radioactive samples.

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Summary Data

Priority Area:	Waste Minimization Projects
Project Type:	Source Reduction
Total Project Cost:	\$18,178
Lifecycle Savings:	\$1500 per year
Implementing Group:	CST-9
Benefiting Group:	CST-9
Useful Life Years:	10
Return on Investment:	92%
Lifecycle Waste Reduction:	15 Liters of mixed low level waste / year
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